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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,818	01/25/2007	Adrian James Cable	3808.1003-000	8692
21005 7590 07/22/2009 HAMILTON, BROOK, SMITH & REYNOLDS, P.C. 530 VIRGINIA ROAD P.O. BOX 9133 CONCORD, MA 01742-9133			EXAMINER CALLAWAY, JADE R	
			ART UNIT 2872	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,818	Applicant(s) CABLE ET AL.	
	Examiner JADE R. CALLAWAY	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/14/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The preliminary amendments to the claims and the specification, in the submission dated 6/14/06, are acknowledged and accepted.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

3. The drawings were received on 6/14/06. These drawings are acceptable.

Claim Objections

4. Claim 1 is objected to because it recites the limitation "the SLM" in line 3. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

5. Claim 2 is objected to because it recites the limitation "the SLM" in line 3 and the limitation "the repeating pattern of holographic elements" in lines 4-5. There is insufficient antecedent basis for these limitations in the claim. Appropriate correction is required.

6. Claims 3-6 are objected to because they are dependent on claims 1 or 2 and inherit at least the same deficiencies as claims 1 or 2.

7. Claims 1, 2, 6 and 9 are objected to because the abbreviation "SLM" is not defined in the claims. Claims 3-5 are objected to because they are dependent on claims 1 or 2 and inherit at least the same deficiencies as claims 1 or 2.

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8. Claim 9 is objected to because it recites the limitation "the SLM" in line 3. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by Kasazumi et al. (EP 0450644 A2) of record.

Consider claim 7, Kasazumi et al. teach (e.g. figures 3a-3c) a method of increasing the viewing angle of a hologram on a pixellated hologram display device having a predetermined resolution, the method comprising disposing a pixellated phase mask (200, diffuser) with respect to the pixellated hologram display device (300, liquid crystal device) for viewing the hologram, wherein the resolution of the pixellated phase mask is greater than that of the pixellated hologram display device (there are 9 pixels in the phase mask for every one pixel on the SLM device) [pg. 5, lines 3-55].

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kasazumi et al. (EP 0450644 A2) of record, in view of Hesselink et al. (5,995,251).

Consider claim 1, Kasazumi et al. disclose (e.g. figures 3a-3c) a holographic display comprising a pixellated hologram display device having a predetermined resolution and a pixellated phase mask (200, diffuser) arranged such that holograms are displayed on the SLM (300, liquid crystal device), wherein the phase mask has a resolution higher than the predetermined resolution (there are 9 pixels in the phase mask for every one pixel on the SLM device) [pg. 5, lines 3-35]. However, Kasazumi et al. do not disclose that the holograms displayed on the SLM are viewed through the phase mask. Kasazumi et al. and Hesselink et al. are related as holographic devices. Hesselink et al. teach (e.g. figures 1-2) a device wherein holograms displayed on the SLM (20) are viewed through the phase mask (29) [col. 4, lines 6-18]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the location of the phase mask in relation to the SLM of Kasazumi et al., as taught by Hesselink et al., in order to facilitate adhesion and increase the bonding area of a phase mask with differing phase levels to the SLM.

Consider claim 2, Kasazumi et al. disclose (e.g. figures 3a-3c) a holographic display comprising a pixellated hologram display device having a predetermined resolution and a pixellated phase mask (200, diffuser) arranged such that holograms are displayed on the SLM (300, liquid crystal device), wherein the phase mask co-operates with the SLM such that a repeating pattern of holographic elements (the phase mask imparts a repeating phase shift pattern of $\pi/2$ onto the SLM device) has a higher

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resolution than the predetermined resolution (there are 9 pixels in the phase mask for every one pixel on the SLM device) [pg. 5, lines 3-35]. However, Kasazumi et al. do not disclose that the holograms displayed on the SLM are viewed through the phase mask. Kasazumi et al. and Hesselink et al. are related as holographic devices. Hesselink et al. teach (e.g. figures 1-2) a device wherein holograms displayed on the SLM (20) are viewed through the phase mask (29) [col. 4, lines 6-18]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the location of the phase mask in relation to the SLM of Kasazumi et al., as taught by Hesselink et al., in order to facilitate adhesion and increase the bonding area of a phase mask with differing phase levels to the SLM.

Consider claim 3, Kasazumi et al. disclose (e.g. figures 3a-3c) a holographic display wherein the hologram display device is arranged to display binary phase holograms and the phase mask has four phase levels (e.g. 0, $\pi/2$, π , $3\pi/2$) [pg. 5, lines 18-55].

Consider claim 4, Kasazumi et al. disclose (e.g. figures 3a-3c) a holographic display device wherein the display is constructed and arranged to operate at a given optical wavelength (wavelength at which the device operates), and taking one of the phase levels as a reference (e.g. the zero phase level), the others provide respective phase shifts of $\pi/2$, π , $3\pi/2$ at the given wavelength [pg. 5, lines 18-26].

Consider claim 5, Kasazumi et al. disclose (e.g. figures 3a-3c) a holographic display device wherein the hologram display device is arranged to display four phase

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holograms (e.g. 0, $\pi/2$, π , $3\pi/2$) and the phase mask has two phase-levels (at least two phase-levels are disclosed) [pg. 5, lines 18-55].

Consider claim 6, Kasazumi et al. disclose (e.g. figures 3a-3c and 5) a holographic display device wherein the hologram display device comprises an SLM (1, liquid crystal SLM) [pg. 5, lines 18-55].

Consider claim 8, Kasazumi et al. disclose (e.g. figures 3a-3c) a method of viewing a pixellated hologram, the pixels of the hologram (e.g. 391, pixels of the liquid crystal device) having a predetermined resolution, comprising holograms and a pixellated phase mask (200, diffuser), wherein the resolution of the pixellated phase mask is greater than that of the pixellated hologram (there are 9 pixels in the phase mask for every one pixel on the SLM device) [pg. 5, lines 3-55]. However, Kasazumi et al. do not disclose that the holograms displayed on the SLM are viewed through the phase mask. Kasazumi et al. and Hesselink et al. are related as holographic devices. Hesselink et al. teach (e.g. figures 1-2) a device wherein holograms displayed on the SLM (20) are viewed through the phase mask (29) [col. 4, lines 6-18]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the location of the phase mask in relation to the SLM of Kasazumi et al., as taught by Hesselink et al., in order to facilitate adhesion and increase the bonding area of a phase mask with differing phase levels to the SLM.

Consider claim 9, Kasazumi et al. disclose (e.g. figures 3a-3c) a holographic display comprising a pixellated hologram display device having a predetermined resolution and a pixellated phase mask (200, diffuser) arranged such that holograms

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are displayed on the SLM, wherein the phase mask is arranged so that the respective location where its pixels meet are disposed above (i.e. the phase mask is arranged optically above or on the side of incidence with respect to the SLM device) generally central regions of the pixels of the display device (e.g. 391, pixels of the liquid crystal device) [pg. 5, lines 3-55]. However, Kasazumi et al. do not disclose that the holograms displayed on the SLM are viewed through the phase mask. Kasazumi et al. and Hesselink et al. are related as holographic devices. Hesselink et al. teach (e.g. figures 1-2) a device wherein holograms displayed on the SLM (20) are viewed through the phase mask (29) [col. 4, lines 6-18]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the location of the phase mask in relation to the SLM of Kasazumi et al., as taught by Hesselink et al., in order to facilitate adhesion and increase the bonding area of a phase mask with differing phase levels to the SLM.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JADE R. CALLAWAY whose telephone number is (571)272-8199. The examiner can normally be reached on Monday to Friday 6:00 am - 3:30 pm est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JRC
/JADE R. CALLAWAY/
Examiner, Art Unit 2872

/Stephone B. Allen/
Supervisory Patent Examiner
Art Unit 2872